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The Music Thesaurus Project is an initiative to develop a faceted thesaurus for music materials. The *Library of Congress Subject Headings* provide inadequate subject access to music in many ways, such as a lack of specificity and an incomplete syndetic structure, and its music headings are complex and difficult to construct. In addition, current music cataloging practice does not provide adequate access to non-Western and popular music. The *Music Thesaurus* would solve these problems by separating concepts into facets and building a complete syndetic structure, practices that will aid in the retrieval of Western art music as well as non-Western and popular music. This study evaluates the proposed structure for the *Music Thesaurus* and makes recommendations for improvement.

Headings:

- Library of Congress subject headings
- Music literature and scores – Cataloging
- Subject headings – Music
- Thesauri

FACETED SUBJECT ACCESS TO MUSIC:
AN EVALUATION OF THE MUSIC THESAURUS PROJECT

by
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Introduction

Subject access has long been a problematic area in music cataloging because of the many aspects of musical compositions that need to be expressed in order to provide thorough access. The *Library of Congress Subject Headings* (LCSH), the standard controlled vocabulary for music cataloging, is fraught with problems such as headings that do not express all aspects of the music they describe or that divide similar materials. Since many of these problems are remnants of the card catalog age, when it was impractical to assign too many separate terms to an item, it is time to consider new ways of doing music subject cataloging that will make fuller use of the capabilities of online systems.¹

The Music Thesaurus Project, an initiative sponsored by the Music Library Association (MLA), is a possible solution to the difficulties in indexing and searching that are caused by the inadequacies of LCSH. The project was formed to develop a faceted thesaurus for music materials consisting primarily of vocabulary from LCSH. Judging from existing literature, the *Music Thesaurus* is nowhere near complete, but there is sufficient information available on its goals and structure to judge how well it will improve music subject access, how well it incorporates existing controlled vocabularies for music, and how it could be improved. The goal of this paper is to explain why this initiative is necessary, evaluate the goals and execution of the project, and make recommendations for the future.

¹ In fact, complaints about the structure of LCSH music headings date back at least thirty years, to the beginnings of computer-based cataloging systems. See Seibert 1982, 39-41.

Challenges in Music Subject Access

The main difficulties in subject access with LCSH include the complicated nature of music subject headings, the differing requirements of different types of music, and some problems caused by the general nature of LCSH. These difficulties result in users' not being able to find appropriate headings or finding only some of the materials that meet their needs.

Subject access to music materials is unique in part because of the need for form headings rather than topical headings for scores and sound recordings. LCSH form headings for music require a number of different elements, including genre, medium of performance, sacred or secular nature of the text, and form of item, to be expressed in a single heading. At the least, most headings express both form and genre. Genre is expressed first except in cases where the piece is not in any particular genre; for instance, the most general heading for solo piano music is "Piano music," but a great deal of music receives headings such as "Sonatas (Piano)" or "Suites (Piano)" instead. The decision to place genre first in subject headings means that it is very difficult to retrieve all solo piano music using a subject heading search, which is problematic since in many cases users are much more likely to search for music by medium of performance than by genre, particularly when musicians are looking for pieces to perform. Even the Library of Congress is aware of this problem. Ostrove, music specialist for the Cataloging Policy and Support Office, wrote that "the basic structure of most headings for musical works—form first, followed by medium of performance—isn't the way musicians think: medium of performance is typically the point of departure" (Ostrove 2001, 102). Table 1 shows several different types of headings that can be used for solo piano music.

Table 1: Types of subject headings used for solo piano music

Type of heading	Examples
Unmodified	Piano music
Modified by “, Arranged”	Piano music, Arranged
Modified by “([Style])”	Piano music (Blues) Piano music (Jazz) Piano music (Ragtime)
Form/genre modified by “(Piano)”	Canons, fugues, etc. (Piano) Scherzos (Piano) Variations (Piano)
Form/genre modified by “(Piano), Arranged”	Marches (Piano), Arranged Suites (Piano), Arranged Symphonies (Piano), Arranged
Form/genre with subdivision “Piano scores”	Cantatas, Secular – Piano scores Operas – Piano scores
Form/genre with subdivision “Excerpts, Arranged”	Musicals – Excerpts, Arranged

Clearly no single subject heading search will bring up all catalog records with any of these types of headings, and a subject keyword search for “Piano” will retrieve not only records for solo piano music, but also ones with headings such as “Violin and piano music” or “Concertos (Piano).” Due to the number of elements that must be expressed in music headings, in some cases LCSH leaves out certain information altogether, such as the exact instrumentation of vocal pieces accompanied by chamber ensembles, or the solo voices used in choral music, making it difficult for users to retrieve pieces with the exact instrumentation they seek.

Another problem that music materials present is that music subject cataloging practice is largely aimed at providing access to art music. Practices for other types of music are not as well-developed or thorough. Popular music is generally most accessible through stylistic headings; aspects such as medium of performance that are essential in Western art music are almost irrelevant. Berman has written a great deal about the tendency of LCSH to lag far behind popular culture in adding stylistic headings for

popular music, such as “Rock music” and “Country music” (Berman 1981). His efforts led to many more stylistic terms for popular music being added to LCSH, but they are unfortunately not often used; most recordings of popular music receive only a general heading such as “Popular music” or “Rock music,” sometimes with a chronological subdivision. More specific headings such as “Heavy metal (Music)” and “Progressive rock music” are not applied to many of the recordings for which they would be appropriate, perhaps in part because catalogers are not familiar enough with these types of music to determine the correct headings. Jazz is also given inadequate subject access through LCSH. A 1983 study found that medium of performance was the most desired subject access point for jazz (Kaufman 1983, 9-11), but even today many headings for jazz in LCSH do not express medium of performance. Specific headings such as “Jazz quartets (Piano, saxophone, drums, double bass)” do not exist; instead, general headings such as “Saxophone with jazz ensemble” or simply “Jazz” are usually used. This lack of precision makes it difficult for users to find what they want.

Non-Western music can be even more problematic than Western popular music because of patrons’ and librarians’ lack of familiarity with the music. A large number of subject headings are necessary so that the music can be accessed via place, culture, medium of performance, or genre; it cannot be assumed that, for instance, a patron whose seeks a recording of Javanese music will think of the heading “Gamelan music,” so “Music – Indonesia – Java” is also needed. Though complaints (such as in Kaufman 1977) have led the Library of Congress to develop guidelines for providing access to all these aspects of non-Western music (see Library of Congress, Cataloging Policy and Support Office 1996, H 1917), it can still be difficult to find all music from a particular

place or culture. Adequate subject access to non-Western music is even more important than with other materials, since sound recordings are often not available for browsing in libraries, and these materials often lack access by performer name (Kaufman 1977, 1).

More general structural problems with LCSH can also lead to problems in music subject access. Although LCSH includes some broader, narrower, and related term references, it does not have a fully developed syndetic structure. Instead, these references have been added haphazardly. This state of affairs is inevitable because, as Ostrove stated, “It is not a system for the organization of knowledge....LCSH isn’t entirely reliable for [showing the relationships between terms] because concepts are missing” (Ostrove 2001, 102). Headings are added to LCSH only as needed for cataloging library materials. Thus, there was no overall conceptual map of the discipline of music developed to build the reference structure, so missing links are inevitable. Indeed, it would be impossible for LCSH to have a fully developed reference structure because of the prevalence of terms that express more than one concept. For instance, “Suites (Piano)” would be a narrower term both for “Suites” and for “Piano music.”

Another problem with LCSH is the lack of scope notes for most of its terms. This lack of information is particularly problematic in music because of the number of terms that have multiple meanings. For instance, the meaning of the term “motet” changed from a specific type of piece from the Middle Ages to, in later years, any sacred polyphonic piece with a Latin text. Despite this fact, LCSH contains only the heading “Motets” with no qualifiers.² Though the 670 (Source Data Found) field in the authority

² In contrast, the ballade, which was a Renaissance vocal genre as well as a type of instrumental piece in the nineteenth century, does receive two separate headings, “Ballades (Polyphonic chansons)” and “Ballades (Instrumental music),” providing an example of how the scope of subject headings can be made more clear

record for this heading gives a definition of the term indicating that it refers to more than one type of music, there is no scope note and therefore this information is unavailable to users. Another reason that scope notes would be useful is that many genres are represented with two slightly different headings, one to be used as a form heading and one to be used as a topical heading. The difference is often expressed through singular and plural forms of the same word, such as “Symphonies” as a form heading and “Symphony” as a topical heading, and sometimes through differences such as “Choruses” as a form heading and “Choral music” as a topical heading. More recently, the Library of Congress has stopped assigning two separate headings to concepts in this way and instead uses the subdivision “History and criticism” to create a topical heading (Library of Congress, Cataloging Policy and Support Office 1996, H 1160). The subtleties of these headings are confusing to users, and even to librarians, and the lack of scope notes to explain them makes it even more difficult to use library catalogs.

Finally, LCSH lacks a rich lead-in vocabulary, meaning that many terms that users might search are not used as cross-references to authorized terms. For instance, a user who searches on “Neoclassical music” will not be directed to “Neoclassicism (Music),” and a search for “Piano sonatas” does not lead to the authorized term “Sonatas (Piano).” Essentially, users must be familiar with the structure of LCSH music headings in order to successfully perform subject searches, and they must be able to think of variant terms referring to the concepts they want to access.

The net result of all of these problems is that it is difficult for users to find headings appropriate to their needs. It is extremely unlikely that most users will be able

through the use of qualifiers, though it would be even more useful to users if these headings had scope notes explaining what they refer to.

to construct complex headings such as “Choruses, Sacred (Mixed voices, 4 parts), Unaccompanied” or “Symphonies (Piano), Arranged” or even simple ones such as “Marches (Piano).” As a result, retrieval of music materials relevant to a particular need can be a time-consuming, frustrating process that often will not result in what the user wants. The goal of the Music Thesaurus Project is to develop better subject access for music by addressing these problems.

History

In 1989, the MLA Music Thesaurus Project Working Group published a paper discussing the problems with existing music subject access tools and the ways in which a music thesaurus would improve the situation (McKnight, Griscom, and Young 1989). The paper included a recommendation to develop some form of faceted music thesaurus. After describing the difficulties in using LCSH for music because of the many aspects of compositions that must be expressed, the authors wrote that, “A system that supports both pre-coordinate indexing (in which terms are combined by the indexer) and post-coordinate searching (in which users combine their own desired descriptors from a list of single terms) would more clearly define such multielement works and provide for more accurate retrieval of music materials” (McKnight, Griscom, and Young 1989, 715). The development of such a system remains the goal of the Music Thesaurus Project.

In 1992, it was reported that Hemmasi had assumed responsibility for the project (Young and Hemmasi 1992). She began constructing the thesaurus by loading records for LCSH music subject headings, taken from the 1988 edition of *Music Subject Headings* (Bratcher and Smith 1988) and new or changed headings listed in subsequent

issues of the *Music Cataloging Bulletin*, into a database, which was then manipulated using the ARIS thesaurus construction software (Young and Hemmasi 1992).

Over the next several years, Hemmasi published several papers describing the progress made with the thesaurus. A 1993 paper was the first to specifically discuss the facets that would be used in the *Music Thesaurus* (Hemmasi, Rowley, and Anderson 1994). Hemmasi proposed five facets (forms/genres, sound devices, agents, geo-cultural attributes, and other topics) and wrote that she had divided the LCSH headings in the database into these categories. Headings that represented more than one facet (such as “Folk songs, Spanish”) were put into all appropriate categories. Hemmasi then divided the multifaceted headings into their constituent parts, so that each facet contained only the appropriate terms and concepts. A discussion paper submitted in 1994 gave the full list of seven facets used in the thesaurus, adding events and texts to the original five facets (Working Group 1994). In the late 1990s, a working group was formed by MLA to assist in developing the forms/genres facet (Hemmasi and Young 2000, 152). In 1998, the LCSH headings that had been collected for use in the thesaurus were published as the second edition of *Music Subject Headings* (Hemmasi 1998).

The Library of Congress supported the Music Thesaurus Project, considering the development of a faceted thesaurus as an improvement over its own music subject headings, which shows the broad support that the project had in the music cataloging community at one point. The Library of Congress Music Subject Group wrote, “The current system of music subject headings, developed for a card catalog, is antiquated and unsuitable to the online catalog....Clearly what is needed is a new and simplified system for listings forms and media, stripping away the intricate practices developed over past

years” (Library of Congress, Music Subject Group 1993, 3). They pointed out the benefits of the thesaurus, such as improving searching for users and reference librarians and making it easier for catalogers to assign subject terms (Library of Congress, Music Subject Group 1993, 4). Unfortunately, the Library of Congress does not seem to have participated directly in the construction of the thesaurus.

In recent years, little progress appears to have been made on the thesaurus, and nothing has been published since 2000 that indicates the status of the project. The steps that remain in the development of the thesaurus include finalizing the list of terms and building a complete syndetic structure. In addition, it will be necessary for music scholars to review the thesaurus before it is published to make sure that the terminology that has been chosen and the hierarchical structure that has been developed are appropriate to the field (Hemmasi and Young 2000, 151). Though the original set of terms came from LCSH, terminology from other controlled vocabularies for music will also be incorporated, including those used by *Répertoire international de littérature musicale* (RILM), *Music Index*, the *British Catalogue of Music Classification*, the *Library of Congress Classification M schedule*, and the 780 schedule of the *Dewey Decimal Classification*, as well as specialized thesauri being developed for areas such as rock music and non-Western music (Hemmasi 1994, 877). The inclusion of terminology from these sources will both increase the scope of the thesaurus beyond what is included in LCSH and produce a richer vocabulary of non-preferred terms, thus making it easier for users to locate the terms they want.

Though it appears that work on the Music Thesaurus Project itself has stopped, a related project is being developed at Brigham Young University. It began as a project

sponsored by the International Association of Music Libraries, Archives, and Documentation Centres (IAML) whose goal was to index musical performances. Currently, there is a prototype database available online containing terms collected by Hemmasi as well as terms from other sources, but it does not appear that a hierarchical structure has been developed, or even that the vocabulary has been fully developed (*BYU music thesaurus* 2003).

Structure

As stated above, the Music Thesaurus Project seeks to create a faceted thesaurus of music-related terms. The idea of faceted analysis dates back more than two centuries, but it was S.R. Ranganathan who first applied the term “facet” to this type of analysis (Maple 1995). A faceted thesaurus divides its vocabulary into categories; therefore, faceted analysis allows each aspect of a subject to be expressed separately, in contrast to LCSH, which contains many multifaceted headings such as “Suites (Piano)” (expressing both genre and medium of performance) and “Songs, English – Australia” (expressing genre, language, and place). The use of a faceted thesaurus ensures that all of the important aspects of a work can be indexed, imposes a hierarchical structure on the terms, and requires that each term be clearly defined. One of the most important faceted thesauri is the *Art & Architecture Thesaurus*, which served as a model for the construction of the *Music Thesaurus* (McKnight, Griscom, and Young 1989, 719).

The facets of the *Music Thesaurus* are presented in Table 2. The table also gives examples of terms that would be contained in each facet

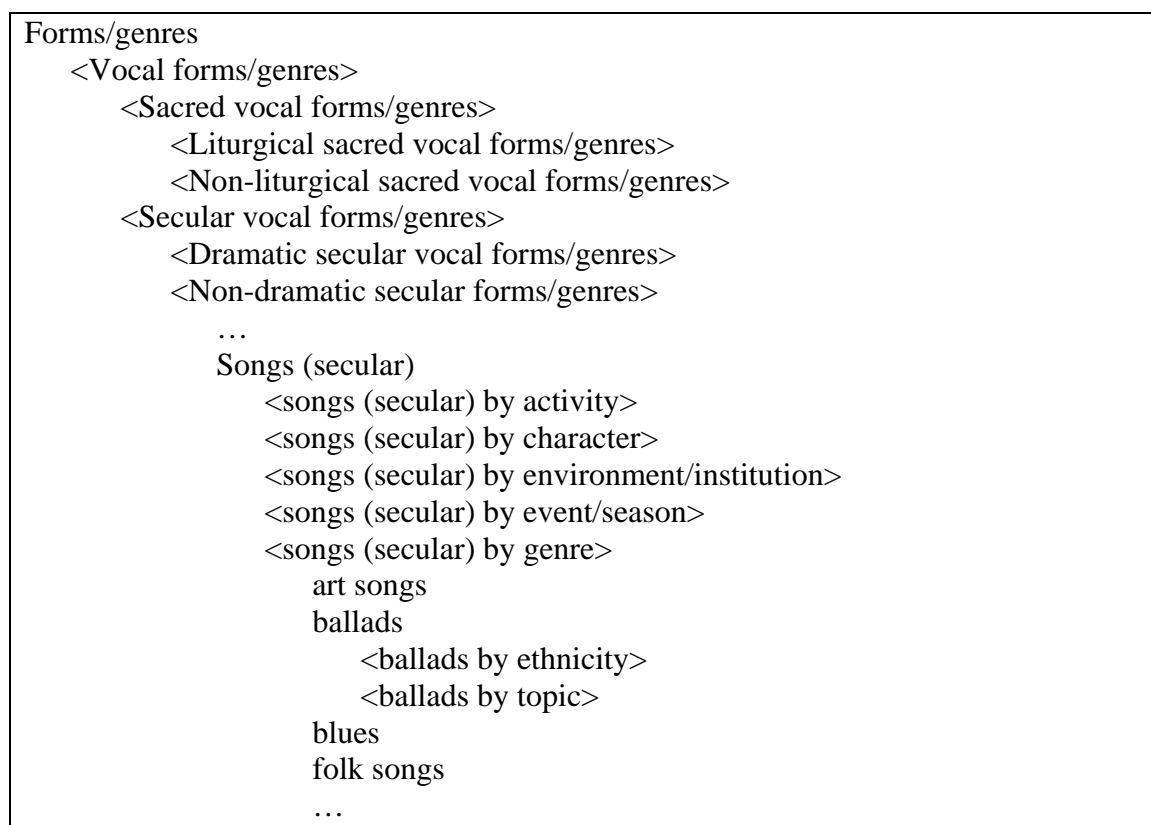
Table 2: Facets of the *Music Thesaurus*, with examples of terms in each facet

Facets	Subcategories	Examples
Agents	Musicians	Violists Conductors
Events	Ceremonies	Weddings
	Fasts/feasts/festivals	Carnival
	Holidays/seasons	Christmas
	Services	Communion
Forms/genres	Instrumental	Sonatas Concertos
	Vocal	
	Sacred	Cantatas
	Secular	Songs
Geo-cultural attributes	Languages	Spanish
	Locations	Senegal
	Religions	Islam
Sound devices	Instrumental	Piano String orchestra
	Vocal	Medium voice
Texts	Sacred	93 rd Psalm Ave Maria
	Secular	
Other topics		Tuning

Within each facet, terms will be arranged hierarchically according to some logical structure. Figure 1 shows a possible way of subdividing the forms/genres facet.³

To fully appreciate the ways in which the *Music Thesaurus* could be an improvement over LCSH, it is necessary to understand the properties of a thesaurus constructed according to the standard for thesaurus construction (NISO 1993). Thesaurus terms contain only single concepts (NISO 1993, 2), while headings in LCSH can contain multiple concepts (such as “Music and architecture,” any heading that expresses both genre and medium, or any heading with a subdivision). Thus, thesaurus terms are

³ Example taken from Hemmasi 1994, 879. Headings surrounded by < > are node headings, meaning that they are used to group the authorized terms but are not actually used for indexing.

Figure 1: Possible hierarchy of the forms/genres facet

postcoordinated, while subject headings often consist of precoordinated strings. Thesauri have a complete syndetic structure, in which every term is related to other terms through broader term, narrower term, and related term references (NISO 1993, 13). As discussed above, LCSH does not have a complete syndetic structure, since its terms often lack references to related terms. Thesaurus terms are constructed consistently, according to literary warrant (NISO 1993, 4-6), whereas LCSH contains headings constructed inconsistently (such as “Choruses, Sacred” versus “Sacred songs”). Each of these qualities of well-constructed thesauri will make the *Music Thesaurus* a more user-friendly controlled vocabulary, both for catalogers and for users, than the LCSH headings for music.

Some examples will show how terms from the *Music Thesaurus* will allow for more accurate searching than the equivalent headings from LCSH. One commonly mentioned example is Schubert's *Der Hirt auf dem Felsen*, a song for high voice accompanied by piano and clarinet. Library of Congress subject cataloging policy calls for this piece to receive the heading "Songs (High voice) with instrumental ensemble." All vocal pieces accompanied by chamber ensembles of more than one instrument receive headings that end in "with instrumental ensemble" (or, if all the instruments are all in the same family, "with string ensemble" or the like) rather than naming the specific instruments, presumably because the headings are already long and convoluted as they are and because the number of different instrumental combinations used to accompany vocal music would result in a subject file divided into many different categories. However, using the *Music Thesaurus*, this piece would receive the form/genre heading "Songs" and the sound devices headings "High voice (1)," "Piano (1)," and "Clarinet (1)." Thus the terms assigned are more specific than the equivalent LCSH, and they provide more flexibility in searching because songs are not automatically divided into different categories. Searchers could search the term "Songs" and view all songs, regardless of voice type or accompaniment, or they could search only for songs with a particular voice type or accompaniment. Similarly, they could search for all pieces with a particular instrumentation, regardless of genre. Since the terms are not pre-coordinated, searching is more flexible. A similar example is choral music with soloists. In LCSH, vocal soloists are not represented in subject headings when they perform with chorus, but with the *Music Thesaurus*, they easily could be, since it would not result in a long and convoluted single heading.

Similarly, non-Western music would be easier to search with single-faceted terms and a complete syndetic structure. With LCSH, a user searching for Indonesian music might search under “Music – Indonesia,” but this heading would not be used for some types of Indonesian music. For instance, a recording of kroncong music would be given the specific genre heading “Kroncong songs,” as well as the heading “Popular music – Indonesia,” which is only linked to “Music – Indonesia” via the broader term reference to “Music” in the authority record for “Popular music.” It is highly unlikely that a patron would either follow this series of links or think of the heading “Popular music – Indonesia.” However, if the type of music were separated from its geographical origin, it would be possible to access all Indonesian music, regardless of its genre. In addition, a complete syndetic structure in the geo-cultural attributes facet would make it easier to search for music by geographic origin, since the music of Indonesia would be linked to the music of larger areas (Southeast Asia) and smaller ones (Bali or Java). Regardless of what level of geographic specificity the user starts with, he or she can easily navigate to a larger or smaller geographic area.

Overall, the *Music Thesaurus* allows both for greater precision and greater recall than LCSH, since music will be indexed more specifically, but users can search only on certain facets if they so desire. The hierarchical structure will help users find the terms they want, as well as giving a context for each term, which can serve in addition to or instead of a scope note to explain the exact meaning of the term as it is used in the thesaurus. Since its terms will be constructed consistently, it will be easier for both catalogers and searchers to find the terms they want. The use of single-faceted concepts

will make it easier to link preferred and non-preferred terms, creating a richer lead-in vocabulary (Hemmasi 1994, 880).

Implementation

The existing literature on the Music Thesaurus Project does not give very much specific information about how it will be used. Seemingly, the most important use of the thesaurus will be to improve users' ability to search for music in online library catalogs.

One paper gives an example of how terms from the *Music Thesaurus* could be represented in Machine Readable Cataloging (MARC) format (Working Group 1994).

Table 3 shows the MARC subfield codes that could be used.

Table 3: MARC subfield codes for *Music Thesaurus* data

Subfield code	Meaning	Values
c	facet designation	a – agents e – events f – forms/genres g – geo-cultural attributes s – sound devices t – texts o – other topics
a	focus term	main term (generally the form/genre)
b	non-focus term	term modifying the main term
n	number	follows the sound devices facet to indicate when two or more of an instrument are used in the music being indexed; when this field is absent, it is assumed that there is only one of the instrument

Figure 2 shows how *Der Hirt auf dem Felsen* could be coded into MARC format using the 654 (Faceted Topical Terms) field, originally developed for use with the *Art & Architecture Thesaurus*.

Figure 2: MARC format for *Music Thesaurus* terms for Schubert's *Der Hirt auf dem Felsen*, for high voice, clarinet, and piano

654	⌘c f ⌘a songs ⌘c s ⌘b high voice ⌘c s ⌘b clarinet ⌘c s ⌘b piano
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The fact that this type of representation would separate aspects of a work into different facets while keeping them all in one MARC field means that searching will be improved in another way besides increasing specificity. Due to the way LCSH is currently structured, some pieces require more than one subject heading in order to express all aspects of the work. For instance, Johann Sebastian Bach's *Christmas Oratorio* receives two separate subject headings "Oratorios" and "Christmas music," to express its content. A user who wants to retrieve all oratorios related to Christmas will need to search on both headings. The problem with this method is that it can result in "false drops," or retrieval of irrelevant records, due to the fact that some scores and most sound recordings contain more than one piece of music and there is no way of showing which subject headings refer to the same piece. For instance, if the *Christmas Oratorio* were on a sound recording with a symphony and a user in search of a Christmas-related symphony searched for "Symphonies" and "Christmas music," the record for that sound recording would be returned even though it would not actually be relevant. With the *Music Thesaurus*, it would be possible to search for symphonies and Christmas and retrieve only records where those terms appear in the same field. A representation of these situations is shown in Figure 3.

It should be noted that in most, if not all, online library catalogs available today, the only way to search these terms would be through keyword searching, so the benefit of having "Christmas" linked to "Oratorios" but separate from "Symphonies" would

Figure 3: LCSH and *Music Thesaurus* terms for a sound recording containing Bach's *Christmas Oratorio* and a symphony

LCSH:

650 0 Oratorios.

650 0 Christmas music.

650 0 Symphonies.

***Music thesaurus* terms:**

654 Ꞥc f Ꞥa oratorios Ꞥc e Ꞥb Christmas

654 Ꞥc f Ꞥa symphonies

be lost. Thus, more sophisticated search interfaces that can search for terms appearing in the same field would be needed in order to derive all of the benefits of this system.

Even if the *Music Thesaurus* is not actually used in MARC catalog records, it would be valuable to searchers and librarians in other ways. It could be implemented as a front-end interface in libraries that would map thesaurus terms onto terms from LCSH, thus providing some benefits in searching. It could be used for collections outside traditional libraries, such as online collections of digital materials (Music Thesaurus Project Advisory Task Force 2001). It would aid catalogers as a valuable tool for finding vocabulary; its fully developed hierarchical structure would allow them to more easily find the terms they seek. The development of a hierarchical structure would also expose gaps in LCSH, as well as terms that are not well-defined (such as “Motets”).

However, to make full use of the *Music Thesaurus*, it would be necessary to use its terms in catalog records, raising the question of whether it would be at all plausible to add new subject terms to all of the hundreds of thousands of existing bibliographic records for musical materials. The *Functional Requirements for Bibliographic Records* (FRBR) model (IFLA Study Group 1997) provides some consolation. It calls for a four-level hierarchy for bibliographic records, with entities called work, expression,

manifestation, and item. Table 4 shows how these entities are defined and gives examples of each.

Table 4: FRBR entities and examples (definitions from IFLA Study Group 1997)

Entity	Definition	Example
work	“a distinct intellectual or artistic creation”	Beethoven’s <i>Symphony no. 5</i>
expression	“the intellectual or artistic realization of a work”	Recording of this work performed by the New York Philharmonic, conducted by Leonard Bernstein, in 1961
manifestation	“the physical embodiment of an expression”	Issue of this performance on Sony Classics SMK 63079
item	“a single exemplar of a manifestation”	Copy of this compact disc owned by the music library at the University of North Carolina at Chapel Hill

As cataloging is done today, the work level corresponds roughly with the name-title authority record, and the manifestation level corresponds with the bibliographic record. Since name-title authority records contain no subject information, there is a great deal of duplication of subject information in bibliographic records. For instance, every catalog record for a score or recording of Beethoven’s *Symphony no. 5* contains the subject heading “Symphonies,” but in theory, this heading is applicable at the work level and should be applied to the authority record instead. If the FRBR model were implemented in library catalogs, it would be possible to apply subject information at the work level, thus significantly decreasing the amount of redundancy in the catalog and the number of records that would need *Music Thesaurus* terms added, since many musical works have a large number of expressions and manifestations.

In addition, it would be possible in many cases to map from LCSH to the *Music Thesaurus* automatically, since many subject headings map straightforwardly onto thesaurus terms. Only in cases where there is more than one piece contained on an item or where LCSH does not provide complete information about instrumentation or some other aspect of the work would a cataloger be required to actually look at the record to add thesaurus terms. Otherwise, automatic conversion could be used to save catalogers a great deal of time.

Context

Other projects to develop faceted thesauri or subject heading lists can provide insight into how the *Music Thesaurus* might be structured. These include the *Art & Architecture Thesaurus* (AAT), the FAST (Faceted Application of Subject Terminology) project, and various existing ways of providing faceted subject access to music.

As stated above, the AAT served as a model for the *Music Thesaurus*, and an examination of its structure and content helps to show how the *Music Thesaurus* could be structured, implemented, and improved. Vocabulary for art and architecture is similar to that for music in many ways, such as being highly specialized and using form headings, so the AAT provides a useful model for the development of the *Music Thesaurus*, especially since it has been so successful and widely adopted.

The AAT contains facets for associated concepts, physical attributes, styles and periods, agents, activities, materials, and objects. Though the impetus for development of the AAT came from the art library community, it has actually been used primarily in museums and for other non-book collections, since the adoption of a new controlled

vocabulary for library materials has so far been judged to be too big a change (Barnett and Peterson 1990, 13). However, in order to aid libraries in making the transition, the developers of the AAT included LCSH terminology whenever possible, either as preferred or non-preferred terms, so that mapping between the two vocabularies will be as easy as possible (Whitehead 1990). The example of the AAT suggests that, while it will be difficult to implement the *Music Thesaurus*, the fact that it is based on LCSH vocabulary should make the transition smoother.

FAST is an initiative by OCLC: Online Computer Library Center to develop simplified subject terms based on LCSH. In order to simplify the terms, they have separated headings into facets corresponding to the different types of headings and subdivisions used in LCSH, which are topical, geographic, form, chronological, and names. Thus, instead of a precoordinated string such as “United States – History – 20th century – Bibliography,” each of these terms (which are geographic, topical, chronological, and form headings, respectively) would be assigned separately. The purpose of the FAST project, much like that of the Music Thesaurus Project, is to create subject terms that are less convoluted and easier to apply. Though the facets are more general than those of the *Music Thesaurus*, since the scope of the project is much more general, the project shows that the library community as a whole sees the benefit of developing faceted subject access to materials.

It should also be noted that other systems have been developed that provide faceted subject access to music, though the *Music Thesaurus* is the only one that uses natural language. The *Dewey Decimal Classification* 780 schedule includes facets for medium of performance, form/genre, and events, among others. It has been suggested

that because of their faceted nature, Dewey numbers for music could be used for online information retrieval of the sort that the *Music Thesaurus* will be used for (Young 1990, 174). The *British Catalogue of Music Classification* and the *Bliss Classification* are also fully faceted, using alphabetical codes to represent terms.

Possible Improvements

The *Music Thesaurus* as it stands does not include all of the types of information currently included in subject headings from LCSH. The purpose of this section is to consider the benefits of adding additional facets to the thesaurus and changing the scope of the existing ones.

Subject headings for music can include information besides what is currently explicitly represented in the Music Thesaurus Project. A list of these types of information and some sample headings are shown in Table 5.

Time is expressed in music catalog records in the form of headings such as “Music – 19th century” and “Blues (Music) – 1961-1970.” The use of these subdivisions is governed by the *Subject Cataloging Manual: Subject Headings*, which states that in the case of Western art music, they should be used only for topical materials and collections of musical works focusing on a particular period; they should not be applied to individual works or collections of music by a single composer (Library of Congress, Cataloging Policy and Support Office 1996, H 1160). Chronological subdivisions are used somewhat more often for popular music as a way of breaking up large files for general headings such as “Rock music” and “Jazz”; these are usually subdivided by decade according to practices established in the *Subject Cataloging Manual* (Library of

Table 5: Types of information in LCSH music headings that is not represented in existing *Music Thesaurus* facets

Type of information	Sample headings
Time	Rock music – 1961-1970 Oratorios – 18 th century
Style	Musique concrète Serialism (Music)
Audience/setting	Operas – Juvenile
Physical form	Choruses, Secular (Mixed voices) with orchestra – Vocal scores with piano String quartets – Scores and parts
Extramusical associations	Flowers – Songs and music Political ballads and songs Pastoral music (Secular)
Number of performers	Trios (Piano, clarinet, violin) Vocal quartets, Unaccompanied
Arrangement	Piano music, Arranged
Excerpts	Symphonies – Excerpts

Congress, Cataloging Policy and Support Office 1996, H 1916.5). Though chronological designations are rarely applied to scores and sound recordings of Western art music, it would be beneficial to users to be able to limit their searches to music composed in a particular period. Information about when pieces were composed is readily available in reference sources such as the *New Grove Dictionary of Music and Musicians*. Thus a facet for time should be added to the *Music Thesaurus*. It would be necessary to define precisely how this field should be used, for cases where more than one date is appropriate. For instance, a piece may have been originally composed at one time and then revised or arranged later.

A related facet would be style, including headings such as “Minimal music” or “Neoclassicism (Music).” Though many stylistic terms for Western art music exist in LCSH, they are only applied to books, not to musical works, but it would be useful to have musical works indexed by style. As discussed above, stylistic headings are applied

to popular music, though not always as specifically as might be desirable. To aid in finding appropriate stylistic headings for popular music that they are unfamiliar with, catalogers could use reference sources such as the *All Music Guide*. From the sample hierarchy for forms/genres shown previously in Figure 1, it appears that stylistic headings have been classified in that facet. However, it would be better to separate the concept of musical from that of musical style, since they are actually separate concepts that should both be indexed. Although a facet for style would be problematic because it requires a subjective judgment on the part of the cataloger, it would be useful in helping users identify works of a particular stylistic period. It would probably be best for this facet to be used only in cases where the musical style is not defined sufficiently by the time and geo-cultural attributes facets. For instance, there would be little value in indexing a Mozart piece as “Classical,” since this classification is broad and applies to most music written at that time and place. However, more specific styles, such as neoclassicism, are not well represented merely through the indexing of time and place.

Audience/setting could be used to represent the ways in which a piece of music would be used. For instance, there are many pieces intended to be performed for and/or by children, and these usually receive the subdivision “Juvenile” in LCSH. Smiraglia pointed out that setting is another aspect that could be indexed, such as in the case of a mass intended for concert performance rather than for a religious service (Smiraglia 1989, 66). Though the addition of this facet to the *Music Thesaurus* would be useful in some situations, it is probably not important enough to be worth adding. The audience of a work can already be indexed using the “Target Audience” fixed field, and the idea of setting is so highly subjective that it would probably rarely be indexed.

A facet for physical form could be used to index the various forms of printed music, such as full scores, miniature scores, vocal scores, and so on, and perhaps also for sound recordings. However, since there is already a fixed field for Format of Music, it would be more useful to make this a required field and expand the options available. For instance, there is currently no code specifically for scores and parts; the addition of codes to represent all the formats currently represented in LCSH subdivisions would make this a more useful field for searching.

A facet for extramusical associations would be the equivalent of the existing headings of the form “[Topical heading] – Songs and music.” In current cataloging practice, these headings are used sparingly, but the addition of more of these would be useful both to performers and scholars seeking pieces with a particular theme. However, the example of the AAT shows that it might be best not to actually include topical terms in the *Music Thesaurus*, since iconographical terminology, that which describes the subject of works of art, was judged to be out of the scope of the AAT (Barnett and Peterson 1990, 9). Since developing a complete hierarchy of subjects for pieces of music would be extremely difficult and time-consuming, it would be best to just use LCSH for this. On the other hand, terms that name types of pieces with extramusical associations, such as pastoral music, should be included. Kaufman named a number of different types of songs characterized by extramusical associations, such as drinking songs, hunting songs, students’ songs, prisoners’ songs, bawdy songs, and humorous songs (Kaufman 1983, 36).⁴ Though the sample forms/genres hierarchy shown in Figure 1 includes “songs (secular) by activity” as a subdivision, these are actually not characterized by

⁴ The distinction between, for instance, prisoners’ songs and songs about prisoners or prison should be noted. Prisoners’ songs, like drinking songs and hunting songs, are associated with a particular activity or setting rather than being about a particular topic.

form, but rather by extramusical association, and would be better separated into their own facet.

Adding the total number of performers to catalog records for solo or chamber music would make it much easier to search for, for instance, solo piano music without retrieving all music that contains a piano. It might also be used to retrieve all pieces by a particular composer with a certain number of instruments. Finally, it would be useful in cases where a piece calls for a performer to play more than one instrument, such as if a performer played oboe on some movements and English horn on others, since it would allow for all the instruments used to be indexed without implying that there is a greater number of performers than there actually is.

“Arranged” and “Excerpts” are added to subject headings to express the relationship between the music being cataloged and the original piece. “Arranged” shows that the piece was originally composed for another medium of performance, while “Excerpts” shows that the piece being cataloged is part of a larger piece. Since arrangement is also expressed in uniform titles and is not particularly important to most searchers, it is probably not worth expressing in the *Music Thesaurus*. The Library of Congress Music Subject Group agreed that the concept of arrangement could be omitted from subject headings (Library of Congress, Music Subject Group 1993, 4). However, users are likely to be interested in whether or not an item consists of excerpts, since they might require complete pieces, so it would be useful to index this concept.

As for the existing facets of the *Music Thesaurus*, the one that is particularly in need of being expanded is the facet for geo-cultural attributes. A subcategory should be added for ethnic or cultural group to accommodate such concepts as “Hopi Indians –

Music.” In addition, the languages and locations subcategories should be expanded to include Western art music. Currently, language and location are expressed only for popular, folk, and non-Western music, but there is no real reason that they should not be used to describe Western art music as well. Language of text is expressed in catalog records for Western art music, but in the fixed fields and 041 field rather than in the subject headings. Adding this information as a subject term would make indexing of music more consistent and allow for more precise searching, since languages would be linked to other information about specific pieces. Location should also be indexed for Western art music, since users might want to look for music of a particular place. Indeed, it would serve to some extent as a stylistic term, especially when combined with the proposed facet for time, since music of a particular place and time often has distinctive qualities even if there is not actually a stylistic term to describe it. For instance, French music of the early twentieth century tends to be distinctively different from German and Austrian music of the same period. One difficulty with the use of this facet for Western art music is that some composers are not specifically associated with a particular place. Ludwig van Beethoven and Johannes Brahms moved from Germany to Austria as young men; George Frideric Handel was German but spent most of his career in England; and Frédéric Chopin grew up in Poland but spent his career in France. These situations would probably best be dealt with by indexing the music under both countries or by making decisions on a case-by-case basis. Another issue is that divisions by nationality are not always the most useful; for instance, the German and Austrian musical traditions are largely inseparable.⁵ However, this facet would still be very useful despite these

⁵ Another way of dealing this would be to index under Western Europe (or some other more general designation) when the music does not have any specifically national character, as suggested in Smiraglia

challenges, particularly in providing geographical access to the music of lesser-represented nations. While it would not be particularly useful to be able to limit a search to German music, since so much Western art music is German, it would be very useful to be able to limit it to Finnish or Australian music.

Table 6 shows the revised set of facets and subcategories for the *Music Thesaurus*, including recommended additions. It should be noted that some of these, marked with asterisks, would not actually be included in the thesaurus, but would be added to catalog records. Terms for the topics subcategory would come from LCSH, while values for the others would be determined by catalogers.

Alternative Options

Though the *Music Thesaurus* would lead to much better subject access to music materials, some of its benefits can be attained in other ways. Improvements can be made to LCSH to make it more thesaurus-like in its structure and generally more user-friendly. For instance, more broader term and related term references could be added to create a more complete syndetic structure, which would help users locate appropriate terms and determine the context in which they are being used. The addition of more scope notes would also aid users. In fact, LCSH has been improved significantly over the years due to complaints from librarians who found it inadequate to meet certain needs. However, building a complete syndetic structure will remain impossible as long as LCSH music headings are predominantly multifaceted, so these changes to LCSH would by no means achieve all of the benefits of the *Music Thesaurus*.

Table 6: Revised list of facets and subcategories for the *Music Thesaurus*

Facets	Subcategories
Agents	Musicians
Events	Ceremonies
	Fasts/feasts/festivals
	Holidays/seasons
	Services
*Excerpts	
Extramusical associations	Types of pieces
	*Topics
Forms/genres	Instrumental
	Vocal
	Sacred
	Secular
Geo-cultural attributes	Cultural/ethnic groups
	Languages
	Locations
	Religions
*Number of performers	
Sound devices	Instrumental
	Vocal
Style	
Texts	Sacred
	Secular
*Time	

In some cases, shortcomings of LCSH are partially made up for by the *Library of Congress Classification* (LCC). The two systems sometimes complement each other. For instance, while LCSH puts genre first, then medium of performance (as in “Sonatas (Piano)”), LCC divides scores first according to medium of performance. All solo piano music is classified between M20 and M39 and then further subdivided by genre (such as M23 for sonatas and M24 for suites). However, since LCC provides only a single entrance concept, it does not come close to providing the flexibility of searching allowed for by the *Music Thesaurus*. It is also even less specific than LCSH in some cases; for instance, choruses accompanied by a keyboard instrument are not further subdivided

based on whether the accompaniment is for piano or organ. In other cases it is too specific, subdividing classes into collections and single works or into original compositions and arrangements. This practice serves to separate pieces for reasons that are not meaningful to most users. LCC also does not provide access to sound recordings, which are usually shelved according to some other classification system or by acquisition number and are often not available for browsing at all.

Another alternative to very specific indexing of scores and sound recordings is the use of reference sources that identify pieces of music with certain characteristics or guide users to appropriate subject headings. For instance, there are books listing topics of vocal pieces, the equivalent of “[Topical heading] – Songs and music” headings. Standard reference sources can be used to find out which composers wrote in a particular musical style, at a particular time, or in a particular place. Reference sources on non-Western music can be used to find the musical styles and genres of a particular geographic region. There are sources listing literature for particular instruments and ensembles. However, these sources do not come close to offering the flexibility of searching that the *Music Thesaurus* would, since they only give users limited choices in what aspects of music they can search for. They require an intermediate step before searching the library catalog, as well as requiring more searches in the catalog itself (since users will have to search for pieces individually after finding citations for them in a reference source). Finally, they will not list everything that is available in the library, particularly the more obscure pieces.

Finally, there exist MARC fields that could be used to encode some music subject information in a faceted way. Some of these are already coded whenever applicable,

whereas others are little-used. The 041 (Language Code) field indexes the languages of sung and spoken text, libretti, and accompanying material. The 043 (Geographic Area Code) field can be used to code geographic areas used in subject headings, though it is not required at this time. The 045 (Time Period of Content) can be used for scores and recordings to provide access to the date or decade of composition. The Form of Composition fixed field and the 047 (Form of Musical Composition Code) field are used to encode genres and styles, such as symphonies and country music. Finally, the 048 (Number of Musical Instruments or Voices Code) field can be used to code the medium of performance of a musical piece. It uses two-letter codes for instruments, ensembles, and voice parts (such as “ka” for piano and “oc” for string orchestra), which are followed by numbers to indicate how many of that instrument are used. These fields are intriguing in their possibilities but nonetheless inferior to the *Music Thesaurus* in ease of implementation and helpfulness in searching. Since they do not use natural language, it is time-consuming for catalogers to code them, particularly in the case of the 048 field. They duplicate information in the subject heading fields, whereas *Music Thesaurus* terms would theoretically be used instead of LCSH, not in addition to it. Most importantly, since these fields are all separate, it is not possible to correlate information that refers to the same piece and separate information that refers to different pieces, so searching them would lead to false drops when there is more than one piece in a score or on a sound recording, which is often the case.

McBride suggested certain changes to the 04x fields, such as eliminating the 043, since it repeats information in the subject headings, and defining additional codes for the 047 and 048 fields (McBride 2000). However, he pointed out that the use of codes rather

than natural language and the fact that information about a single piece is not linked are problematic, and suggested that the best solution would be the use of faceted index terms, such as those being developed by the Music Thesaurus Project. Another problem is that, while the developers of the MARC Music Format intended for these fixed and coded fields to be used for sophisticated searching of the sort that the *Music Thesaurus* will make possible (Seibert 1982, 3-7), in reality most online catalogs do not allow these fields to be searched.

Further Questions

Although the *Music Thesaurus* has great potential as a tool to improve subject access to music, there are a number of unresolved issues that will require further research before the thesaurus can be completely developed and implemented.

Perhaps most importantly, there is the question of whether the Music Thesaurus Project has been limited or influenced by basing its vocabulary on LCSH. It is essential that the *Music Thesaurus* incorporate as much vocabulary as possible from other controlled vocabularies, both general and specialized, as well as from reference sources such as the *New Grove Dictionary of Music and Musicians*, before the hierarchies are constructed so that its structure will not be overly influenced by Library of Congress practices. For instance, the proposed hierarchy for the forms/genres facet, shown previously in Figure 1, appears to be heavily influenced by LCC in the way that it divides up forms of vocal music. Both this hierarchy and LCC begin by dividing between sacred and secular vocal music, which might not necessarily be the most useful division. (In

fact, the concept of sacredness should perhaps be expressed in the extramusical associations facet instead, since it does not by itself affect the form of a piece.)

On a related note, it is important that the thesaurus avoid being overly biased toward Western art music, which is a definite possibility considering that non-Western and popular music have only recently become an important part of most libraries' collections and thus are not always well-represented in LCSH. As one example, Stauffer demonstrated that LCSH is inadequate for describing Jewish liturgical music, since its headings are not specialized enough (Stauffer 1991/1992). Avoiding cultural bias is one reason that as much vocabulary as possible needs to be added to the thesaurus before the hierarchies are developed, so that potential problems can be identified before it is too late to fix them. For instance, Western culture tends to differentiate between art music and folk music, but these distinctions do not exist in all cultures; Central Javanese gamelan, for instance, fits into both of these categories. Thus a hierarchy that is based on dividing music into these categories might not be the best choice. In fact, the facets themselves might not adequately describe the music of some cultures, or they might force terms into categories that they don't really fit into. Experts on non-Western music should thus be involved in the project early enough to help make major structural decisions. One option for dealing with such situations is to make the *Music Thesaurus* polyhierarchical, as the AAT is (About the AAT 2000), allowing a term to have multiple broader terms when it fits logically into more than one category. This will allow for greater flexibility, keeping the developers of the thesaurus from having to arbitrarily assign a term to a single place in the hierarchy. All of this is not to imply that the thesaurus should be completely lacking in cultural bias; rather, the developers of the thesaurus need to consider how it

will be used and determine what will be best for most users. Since it is being developed largely to provide better access to Western art music, a slight bias toward that type of music is not necessarily the wrong choice, but it is important that this bias result from a conscious decision rather than a blind assumption that what works for Western art music will work for all music.

Another question is how catalogers using the *Music Thesaurus* will make the distinction between form and topical headings, such as the difference between the heading for a score of a symphony and the heading for a book about symphonies. As mentioned above, currently LCSH either uses two separate terms as form and topical headings (“Symphonies” versus “Symphony”) or adds the subdivision “History and criticism” to create a topical heading, but this distinction will be impossible in the *Music Thesaurus*, which will include only one form of each term. Perhaps there can be separate MARC fields for topical and form headings from faceted thesauri, as there are the 650 (Topical Term) and 655 (Index Term – Genre/Form) for subject headings.

More generally, since most discussion of the *Music Thesaurus* so far has focused on how it will improve access to music itself, rather than to literature about music, more attention needs to be given to the use of the thesaurus for indexing topical material such as books and articles. These materials tend to be better served by LCSH than scores and sound recordings are, since strings of topical terms and subdivisions can be used to precisely identify the subject of a book. If the *Music Thesaurus* is to be used for indexing topical materials, there must be an investigation into how it can be made to identify subjects as precisely as LCSH.

Another area that should to be investigated more thoroughly is the implementation of the thesaurus, specifically how a switch from LCSH will happen. Though adoption of the thesaurus for cataloging purposes will lead to great advances in information retrieval, it will also undoubtedly be a huge change that will require education for catalogers, reference librarians, and users. On the technical side, it will require a search interface that is able to make use of the hierarchies and facets. The development of more sophisticated searching mechanisms is an essential part of implementing the thesaurus, and music librarians will need to determine how the thesaurus will be used and what their requirements are for search interfaces. Most importantly, online catalogs must be able to limit subject searching to a single field, thus preventing false drops when a score or sound recording includes more than one piece. However, even more sophisticated searching is possible. McBride suggested that greater precision in searching could be achieved through the use of a subfield that would link subject terms with name-title headings for pieces of music and name headings for performers, thus allowing users to search, for instance, for all piano sonatas by a particular composer or all recordings of violin concertos performed by a particular soloist (McBride 2000, 26-28). In order for the *Music Thesaurus* to be used to its full potential, music librarians will need to identify the types of searching that they will want to be able to do. Ideally, a study should be conducted to determine the needs of users and librarians.

Conclusion

Though the *Music Thesaurus* has possible uses beyond the cataloging of library materials, this paper has focused on the ways it could benefit to catalogers and library patrons by replacing LCSH. It has shown why LCSH provides inadequate access to music materials and how the *Music Thesaurus* can provide much better access. The thesaurus will be more comprehensive in its coverage and more flexible in its use. However, the intent of this paper is not to denigrate LCSH, but rather to point out its weaknesses, which result largely from its lack of an overarching structure and from the fact that it was developed for use on catalog cards rather than for online searching. It is impossible for LCSH to provide the kind of access that a faceted thesaurus will without radically changing its structure.

As always in cataloging, the reason for undertaking such a project is to serve the user better. Smiraglia described succinctly why faceted access to music is essential to make searching easier and more productive: “No matter how many salient intellectual and physical facets may be formulated for music materials it is clear that different users will seek the materials in different ways, consulting varying combinations of the facets depending on their purposes” (Smiraglia 1989, 64). Because different users are interested in different aspects of music, it is essential to break up music headings into their component parts so that users can search on whichever aspects are important to them. Though the Music Thesaurus Project appears to be at a standstill at the moment and the music cataloging community appears to have lost interest in developing a thesaurus to replace LCSH, this study has shown why the project is important and should be completed.

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